

## ON THE MYRTACEÆ OF AUSTRALIA.

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The Myrtle family, occurring as it does both within and without the tropics, may be regarded as one of the most useful and extensive families of the Vegetable Kingdom. It is also easily recognised, for the leaves are for the most part opposite, exstipulate, and filled with dots of volatile oil, whilst the venation is marked by a marginal or intramarginal vein. The species are naturally divided into capsular and berried, the former being wholly or chiefly Australian, and the latter widely spread both in the New and Old World. Only one species, *Myrtus communis*, now grows wild in Europe (and that is supposed to have been introduced from Persia), though there is reason to believe, that, during the eocene period when the climate of that division of the globe was much warmer than it now is, Myrtaceous trees flourished there with other plants of an Australian aspect. These trees, which some regard as the last vestiges of the organic creation peculiar to the primitive world, now appear in great abundance in Australia, the *Myrtaceæ* alone, according to Baron F. von Mueller, reckoning between 600 and 700 species and constituting by far the greater portion of the native forests. In the distribution of these trees and shrubs, there is a peculiarity which is somewhat perplexing, for whilst, in some portions of the continent, they occur in undue proportion to the rest of the vegetation, they are limited in others to half the number of genera and a sixth of the species, as will appear from the following estimate of Baron Mueller.

	Genera.		Species.
Western Australia .....	25	..	379
New South Wales .....	18	...	145
Queensland .....	23	...	132
Victoria .....	13	...	78
South Australia .....	11	...	70
North Australia .....	17	...	68

The following genera with one or two exceptions, are limited to Western Australia :—

*Actinodium.*

*Verticorda* (except one species in N. Australia).

*Pileanthus.*

*Lhotzkya* (except two in S. Australia and one in Victoria).

*Wehlia.*

*Astartea.*

*Hypocalymma.*

*Balaustion.*

*Agonis* (except one in Queensland).

*Conothamnus.*

*Beaufortia.*

*Regelia.*

*Phymatocarpus.*

*Calothamnus.*

*Lamarkea.*

*Eremea.*

Sir Joseph Hooker, in referring to the primitive character of the Western Flora, remarks :—“ That no natural order, but that many Genera, and a whole Flora of species, should be created in the smaller and more isolated area of Western Australia, different from what Eastern Australia presents, seems at first sight favourable to the idea that these derivative Genera and species were formed during the gradual migration of certain orders and Genera of the East towards the West. But, on the other hand, this massing of most of the peculiar features of the Australian Flora in the West, unmixed there with Polynesian, Antarctic, or New Zealand Genera, is an argument for regarding Western Australia as the centrum of Australian Vegetation, whence a migration proceeded eastward ; and the eastward Genera and species must in such a case be regarded as derivative forms.” These considerations of a quarter of a century since have received additional illustration from the labours of Mr. Bentham and Baron Mueller, who now show, that, in the great order of the Myrtaceæ alone, Western

Australia is not only rich in species, but that in its Flora generally there is "a singular uniformity, purely Australian without admixture of any other element."

Of the Myrtaceous order not found in Western Australia, but occurring in greater or less abundance along the Eastern and Northern Coasts, the following genera may be enumerated:—

CAPSULAR.	BACCATE.
1. <i>Tristania</i> .	5. <i>Rhodomyrtus</i> .
2. <i>Metrosideros</i> .	6. <i>Myrtus</i> .
3. <i>Backhousea</i> .	7. <i>Rhodamnia</i> .
4. <i>Osbornia</i> .	8. <i>Fenzlia</i>
	9. <i>Decaspermum</i> .
	10. <i>Eugenia</i> .
	11. <i>Acicalyptus</i> .
	12. <i>Barringtonia</i> .
	13. <i>Careya</i> .
	14. <i>Sonneratia</i> .

1. *Tristania* (including *Lophostemon*) has eight species in Australia, of which four belong to N. S. Wales. Besides these, there are two in N. Caledonia, and four in the Indian Archipelago.

2. *Metrosideros* (with which Baron Mueller unites *Syncarpia*) is dispersed over the Islands of the Pacific and Indian Archipelago from New Zealand to the Sandwich Islands.

3. *Backhousea* is a genus confined to Australia, and so far as known, does not extend beyond Queensland and N. S. Wales.

4. *Osbornia*, a genus constituted by F. von Mueller is represented by one species in N. Australia and the Islands adjacent.

5. *Rhodomyrtus* has four species in Eastern Australia, and there is another widely distributed over the Indian Archipelago and extending to China.

6. *Myrtus* is common to the New and Old World, and the Australian species are limited to Queensland and N. S. Wales.

7. *Rhodamnia* is spread over Tropical Asia, and four species are divided between Queensland and N. S. Wales.

8. *Fenzlia* is purely a genus of E. and N. Australia.

9. *Decaspermum* (*Nelitris* of Fl. Aust.) has in Queensland one species only and that is common to the Indian Archipelago and the Philippine Islands.

10. *Eugenia* has 20 species in E. Australia, four of which occur in the East Indies and the Archipelago, *E. jambolana* in particular being very common there and yielding a fruit much eaten.

11. *Acicalyptus* is the "Scaly-bark Tree" of Lord Howe's Island (Frag. Vol. 8, p. 15).

12. *Barringtonia* is a genus confined to the Tropics of the Old World but having two species in Queensland and one in N. Australia.

13. *Careya* has three East Indian species, one of which in Queensland and N. Australia is supposed to be identical with *C. arborea*.

14. *Sonneratia* (placed amongst Lythrarieæ in the Fl. Aust.) has one species common to the Indian Archipelago and W. Australia.

It appears, therefore, that whilst 16 Myrtaceous Genera are peculiar to Western Australia and do not extend beyond it (except in two or three cases), there are 14 Genera in N. and E. Australia, which are common to other regions, and not found near what is termed "the centrum of Australian Vegetation." Mr. Bentham, in the concluding preface to the 7th Vol., of the *Flora Australiensis*, confirms the views of Hooker in the Essay already quoted, and is of opinion, that, although the predominant portion of the Australian Flora is strictly indigenous; yet that a number of genera whose main station is in Tropical Asia extend more or less into Tropical and Eastern Australia, thereby giving to the vegetation of E. Queensland an Asiatic character. In alluding to that part of Australia where some of the Myrtaceous genera, as seen in the foregoing list, are strictly endemic, the same illustrious author speaks of "the remarkable isolation and highly differentiated character of the Flora in the south-west corner." Amongst the genera so isolated, are *Darwinia* and *Verticordia*, the one with 37 and the other with 38 species. These with several other genera are not represented in the south-east extremity of the continent, whilst

of the large genus *Melaleuca* with its 100 species only 11 are found in any part of Victoria. Judging from the greater area and the physical geography of the S.E., region, one would imagine that it would present a much richer Flora than that of the S.W., but such is not the case; and the fact remains yet unexplained. If we could adopt the theory of regarding W. Australia as a kind of centrum from which species emigrated to other parts of Australia, it might be argued that a sufficient period of time had not yet elapsed for a more equalised distribution of species; but then, so far as geological considerations may be permitted to influence our conclusions, the comparative ages of the rocks lead to an opposite opinion, for, according to the phenomena recorded by geologists, the mountains of the East are far loftier and the rocks of a much greater age than the depressed area of the West (Jukes as quoted by Hooker). The distribution of *Eucalyptus* does not throw much light on the question. This genus with the exception of a few species extending to Timor and New Guinea, is entirely Australian, and, according to Baron Muller's recent estimate, the species occur in the following order:—

Western Australia .. . . . . .	46
New South Wales .. . . . . .	50
Queensland .. . . . . .	37
Victoria.....	35
South Australia .. . . . . .	28
North Australia .. . . . . .	25

Here again, as in the great majority of the Australian Myrtaceæ many species are endemic in the West and do not extend from it. By Baron Muller's recent investigations, he finds that at least 37 species (and some of these differing very widely from any of the Eastern forms) are peculiar to W. Australia. Of the remainder, one occurs in N. Australia and Queensland, five in Victoria, and N. S. Wales, and eight in South Australia. *E. rostrata*, so far as yet known, is the only species common to all parts of the continent. The number of the Western species will be considerably increased when the Tropical vegetation of W. Australia has been more

thoroughly examined and described, for, in the opinion of Baron Mueller, there are probably some thirty species yet to be added to the genus, though many of them are only small trees or shrubs. How many of these may be endemic has to be determined, but it seems tolerably certain, that in *Eucalyptus*, as well as in the Myrtaceæ generally W. Australia will predominate over the other colonies in the number and peculiarity of the species. Other orders of plants, common to W. Australia and South Africa, led Sir Joseph Hooker to offer a speculative theory as to the probability "that the peculiar Australian Flora may have inhabited an area to the westward of the present Australian Continent." Since the publication of Hooker's Essay in 1859, the Flora of Australia has been zealously elucidated by the labours of Mr. Bentham and Baron Mueller, and the former, in the concluding preface to the last volume of the *Flora Australiensis*, gives it as his opinion "that the predominant portion appears to be strictly indigenous. Notwithstanding an evident though very remote ordinal tribal or generic connection with Africa, the great mass of purely Australian species and endemic genera, must have originated or been differentiated in Australia, and never have spread far out of it." *Eucalyptus*, indeed, as already remarked is somewhat exceptional as regards Timor and New Guinea, but so far as the Myrtaceæ are considered generally, the capsular genera, comprehending the vast majority of species in all parts of the continent are almost exclusively Australian. How far the labours of geology may assist in determining the comparative age of our Flora, its connection with forms of vegetation long past, and its distribution in different regions, remains yet to be seen.